REMARKS

In the Office Action, the Examiner noted that claims 38 and 42 are pending in the application and that claims 38 and 42 are rejected. In view of the following discussion, the Applicants submit that none of the claims now pending in the application are unpatentable under the judicially created doctrine of obviousness-type double patenting or under the provisions of 35 U.S.C. § 103. Thus, the Applicants believe that all of these claims are now in condition for allowance.

I. REJECTION OF CLAIMS 38 AND 42 UNDER JUDICIALLY CREATED DOCTRINE OF DOUBLE PATENTING

The Examiner rejected claims 38 and 42 under judicially created doctrine of double patenting over claims 42, 49, and 50 of copending Application No. 10/630,664 in view of Frigo (U.S. Patent No. 5,521,734, issued May 28, 1996). In response, the Applicants provisionally agree to file a terminal disclaimer, if necessary, to overcome the present judicially created doctrine of double patenting rejection. Since the copending Application No. 10/630,664 is still pending, the Applicants submit that the terminal disclaimer will be filed only when there is indication that the alleged conflicting claims have in fact been patented and all other rejections against the pending claims of the present invention have been resolved.

II. REJECTION OF CLAIMS 38 AND 42 UNDER 35 U.S.C. §103

Frigo in view of Pan

The Examiner has rejected claims 38 and 42 in the Office Action under 35 U.S.C. §103 as being unpatentable over Frigo in view of Pan et al. (U.S. Patent No. 6,147,786, issued November 14, 2000). The Applicants respectfully traverse the rejection.

Frigo teaches an optical network provided at a lowered cost and improved data throughput due to adoption herein of laser and one-dimensional optical data receiver arrays in lieu of discrete transmitters and receivers. Preferably, the network includes optical network units that return a portion of the signals they receive in a looped-back mode. The returned portion, which may or may not be re-modulated at the optical

network unit, acts as a substantially continuous test to verify the optical integrity of the system.

Pan teaches a hybrid, bi-directional, analog/digital WDM access network system that transmits and receives a wavelength of analog signals and a plurality of wavelengths of digital signals. These signals are communicated between a network and a plurality of users. The system includes a feeder/de/multiplexer for converting the wavelength of analog signals into electrical signals and de/multiplexing the wavelengths of digital signals into a plurality of one-wavelength of digital signals. The system also includes a plurality of mini-digital optical nodes connecting individually to the feeder/de/multiplexer via a plurality of optic fibers, respectively, wherein each of the mini-digital optical nodes converts one of the one-wavelength of the digital signals into electrical signals.

The Examiner's attention is directed to the fact that Frigo and Pan (either singly or in any permissible combination) fail to teach, show, or suggest the routing of an upstream signal received from a first mini fiber node to a second mini fiber node instead of a head end, as positively claimed by the Applicants. Specifically, the Applicants' independent claims 38 and 42 positively recite:

> 38. A communication system, comprising:
> a mux node including a first lightwave interface device for communication with a head end, said mux node further including a second lightwave interface device for transmitting an optical signal including analog and digital signals; and
> a mini fiber node including a third lightwave interface device for receiving said optical signal from said second lightwave interface device of said mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection,
> wherein said mux node includes a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from said head end, demultiplexes the received electrical signals, and forwards separate demultiplexed signals to said second lightwave interface device that transmits said separate demultiplexed signals to designated mini fiber nodes,
> wherein said mux/demux/router component performs a local routing function, wherein an upstream signal received from a first mini fiber node is routed to a second mini fiber node instead of said head end. (Emphasis added)

42. A communication method, comprising:
receiving, in a mux node, first optical signals from a head end;
transmitting, from said mux node, second optical signals to a mini fiber node, wherein said second optical signals include analog and digital signals;
converting, in said mini fiber node, said received second optical signals into first electrical signals for processing;
transmitting second electrical signals to end user equipment via a wired connection,
further comprising receiving electrical signals that have been converted from optical signals received from said head end, demultiplexing the received electrical signals, and forwarding separate demultiplexed signals to designated mini fiber nodes; and
routing an upstream signal received from a first mini fiber node to a second mini fiber node instead of said head end. (Emphasis added)

In one embodiment, the Applicants' invention comprises a mux/demux/router component that is able to perform a local routing function as disclosed in claim 38 (note: Applicants' independent claim 42 recites a method that outlines the steps performed by the apparatus in claim 38). Notably, the component initially receives an upstream signal produced from a first mini fiber node that is intended for an end user serviced by a second mini fiber node. However, rather than routing the upstream signal to the second mini fiber node via the head end, the component instead routes the signal directly to the second mini fiber node to be forwarded to the intended end user, thus creating a reduction in the amount of network traffic.

Conversely, the combination of Frigo and Pan does not teach, show, or suggest this routing component or functionality as disclosed in claims 38 and 42. Specifically, Frigo only teaches an optical network that is utilized to implement a substantially continuous test to verify the optical integrity of a system. Column 4, lines 27-61 and Figure 3 of Frigo depict a continuous loop that connects a system consisting of a central office, optical network units, and a remote terminal. Notably, the disclosed system does not mention the rerouting of signals produced by one mini-fiber node that are intended for the end user (or for any end user for that matter) of a second mini-fiber node.

Pan, which was introduced by the Examiner in order to teach the deficiencies present in Frigo (i.e., the absence of the utilization of optical signals, including analog and digital signals, see Office Action, page 6), also does not teach the routing

component or functionality as positively claimed by the Applicants in claims 38 and 42. Thus, the Applicants submit that Pan does not bridge the substantial gap existing between the Applicants' invention and Frigo. Specifically, the Applicants contend that the combination of Frigo and Pan does not teach, suggest, or mention a routing component or method for performing a local routing function, wherein an upstream signal received from a first mini fiber node is routed to a second mini fiber node instead of said head end as set forth in claims 38 and 42.

Therefore, the Applicants submit that independent claims 38 and 42 fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

Frigo in view of Lu

The Examiner has rejected claims 38 and 42 in the Office Action under 35 U.S.C. §103 as being unpatentable over Frigo in view of Lu et al. (U.S. Patent No. 5,880,865, issued March 9, 1999). The Applicants respectfully traverse the rejection.

Frigo has been discussed above.

Lu teaches a Wavelength-Division-Multiplexed (WDM) network that provides delivery of both switched services and broadcast analog video over optical facilities through an intermediate optical apparatus (e.g., Passive Optical Network (PON)) splitter to a plurality of remote optical apparatuses (e.g., optical-network units (ONUs)). The broadcast signal is provided to only a selected ONU, together with the switched service signal for that selected ONU, the selected ONU then distributes the broadcast signal to other ONUs over a separate distribution facility interconnecting the ONUs.

The Examiner's attention is directed to the fact that Frigo and Lu (either singly or in any permissible combination) fail to teach, show, or suggest the routing of an upstream signal received from a first mini fiber node to a second mini fiber node instead of a head end, as positively claimed by the Applicants in claims 38 and 42.

In one embodiment, the Applicants' invention comprises a mux/demux/router component that is able to perform a local routing function as disclosed in claim 38 (note: Applicants' independent claim 42 recites a method that outlines the steps performed by the apparatus in claim 38). Notably, the component initially receives an upstream signal produced from a first mini fiber node that is intended for an end user serviced by a

second mini fiber node. However, rather than routing the upstream signal to the second mini fiber node via the head end, the component instead routes the signal directly to the second mini fiber node to be forwarded to the intended end user, thus creating a reduction in the amount of network traffic.

Conversely, the combination of Frigo and Lu does not teach, show, or suggest this routing component or functionality as disclosed in claims 38 and 42. Specifically, Frigo only teaches an optical network that is utilized to implement a substantially continuous test to verify the optical integrity of a system. Column 4, lines 27-61 and Figure 3 of Frigo depict a continuous loop that connects a system consisting of a central office, optical network units, and a remote terminal. Notably, the disclosed system does not mention the rerouting of signals produced by one mini-fiber node that are intended for the end user (or for any end user for that matter) of a second mini-fiber node.

Lu, which was introduced by the Examiner in order to teach the deficiencies present in Frigo (i.e., the absence of the utilization of optical signals, including analog and digital signals, see Office Action, page 7), also does not teach the routing component or functionality as positively claimed by the Applicants in claims 38 and 42. Thus, the Applicants submit that Lu does not bridge the substantial gap existing between the Applicants' invention and Frigo. Specifically, the Applicants contend that the combination of Frigo and Lu does not teach, suggest, or mention a routing component or method for performing a local routing function, wherein an upstream signal received from a first mini fiber node is routed to a second mini fiber node instead of said head end as set forth in claims 38 and 42.

Therefore, the Applicants submit that independent claims 38 and 42 fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

III. CONCLUSION

Thus, the Applicants submit that all of these claims now fully satisfy the requirements of 35 U.S.C. §103 and the judicially created doctrine of obviousness-type double patenting. Consequently, the Applicants believe that all these claims are

presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

8/3/05

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